

CLAIMS

We Claim:

1. A water-soluble packet comprising:
5 a copolymer film comprising:
a hydrolyzed copolymer of vinyl acetate and a second monomer, the resultant polyvinyl alcohol copolymer having a degree of hydrolysis, expressed as a percentage of vinyl acetate units converted to vinyl alcohol units, in the range of from about 90% to about 100%; and
10 wherein the second monomer is selected from the group consisting of monocarboxylic acid vinyl monomers, their esters and anhydrides, dicarboxylic monomers having a polymerizable double bond, their esters and anhydrides, and vinyl sulfonic acid monomers and their alkali metal salts; and a quantity of liquid material contained within the packet.
- 15 2. The water-soluble packet of Claim 1, wherein the liquid material comprises a cleaning concentrate.
3. The water-soluble packet of Claim 2, wherein the cleaning concentrate comprises laundry detergent.
4. The water-soluble packet of Claim 1, wherein the second monomer is selected from
20 the group consisting of a monocarboxylic acid vinyl monomer, their esters and anhydrides, dicarboxylic monomers having a polymerizable double bond, their esters and anhydrides.
5. The water-soluble packet of Claim 4, wherein the second monomer is selected from
25 the group of monocarboxylic acid vinyl monomer, their esters and anhydrides, dicarboxylic monomers having a polymerizable double bond, their esters and anhydrides consisting of vinyl acetic acid, maleic acid, monomethyl maleate, dimethyl maleate, maleic anhydride, itaconic acid, monomethyl itaconate, dimethyl itaconate, and itaconic anhydride.
6. The water-soluble packet of Claim 5, wherein the second monomer is itaconic acid.
- 30 7. The water-soluble packet of Claim 6, wherein the level of incorporation of itaconic acid comonomer in the vinyl alcohol-co-itaconic acid copolymer, expressed as a mole percentage, is within the range of from about 1.5 to about 11 mole%,

8. The water-soluble packet of Claim 7, wherein the level of incorporation of itaconic acid comonomer in the vinyl alcohol-co-itaconic acid copolymer, expressed as a mole percentage, is within the range of from about 2.5 to about 8.5 mole%.
9. The water-soluble packet of Claim 8, wherein the level of incorporation of itaconic acid comonomer in the vinyl alcohol-co-itaconic acid copolymer, expressed as a mole percentage, is within the range of from about 4 to about 6 mole%.
10. The water-soluble packet of Claim 1, wherein the second monomer is selected from the group consisting of vinyl sulfonic acid monomers and their alkali metal salts.
11. The water-soluble packet of Claim 10, wherein the second monomer is selected from the group of sulfonic acid monomers and their alkali metal salts consisting of vinyl sulfonic acid, allyl sulfonic acid, ethylene sulfonic acid, 2-acrylamido-1-methylpropanesulfonic acid, 2-acrylamido-2-methylpropanesulfonic acid, 2-methylacrylamido-2-methylpropanesulfonic acid, and 2-sulfoethyl acrylate.
12. The water-soluble packet of Claim 11, wherein the second monomer is 2-acrylamido-2-methylpropanesulfonic acid (AMPS).
13. The water-soluble packet of Claim 12, wherein the degree of polymerization of the vinyl alcohol-co-AMPS copolymer is such that the viscosity of a 4% aqueous solution at 20°C is in a range of from about 3 to about 18 MPa.s (cps).
14. The water-soluble packet of Claim 13, wherein the degree of polymerization of the vinyl alcohol-co-AMPS copolymer is such that the viscosity of a 4% aqueous solution at 20°C is in a range of from about 4 to about 12 Mpa.s.
15. The water-soluble packet of Claim 12, wherein the level of incorporation of AMPS comonomer in the vinyl alcohol-co-AMPS copolymer, expressed as a mole percentage, is in the range of from about 1 to about 8 mole%.
16. The water-soluble packet of Claim 15, wherein the level of incorporation of AMPS comonomer in the vinyl alcohol-co-AMPS copolymer, expressed as a mole percentage, is in the range of from about 2.5 to about 5 mole%.
17. A water-soluble copolymer film packet comprising:
a hydrolyzed copolymer of vinyl acetate and a second monomer, the resultant polyvinyl alcohol copolymer having a degree of hydrolysis, expressed as a percentage of vinyl acetate units converted to vinyl alcohol units, of from about 90% to 100%;
an initial disintegration time at 10° C of less than 60 seconds;

a disintegration time increase after contacting a liquid component contained therein of no more than 50%.

18. The water-soluble copolymer film packet of Claim 17, wherein the second monomer is selected from the group consisting of monomers having carboxylate functionality and monomers having sulfonate functionality.
19. The water-soluble copolymer film of Claim 18, wherein the second monomer comprises a monomer having carboxylate functionality and is selected from the group consisting of a monocarboxylic acid vinyl monomer, their esters and anhydrides, dicarboxylic monomers having a polymerizable double bond, their esters and anhydrides.
20. The water-soluble copolymer film of Claim 19, wherein the second monomer comprises itaconic acid.
21. The water-soluble copolymer film of Claim 18, wherein the second monomer comprises a monomer having sulfonate functionality and is selected from the group consisting of vinyl sulfonic acid monomers and their alkali metal salts.
22. The water-soluble copolymer film of Claim 21, wherein the second monomer comprises 2-acrylamido-2-methylpropanesulfonic acid (AMPS).
23. The water-soluble copolymer film of Claim 20, wherein the degree of polymerization of the copolymer is such that the viscosity of a 4% aqueous solution at 20°C is within a range of from about 5 to about 45 MPa.s (cps).
24. The water-soluble copolymer film of Claim 23, wherein the degree of polymerization of the copolymer is such that the viscosity of a 4% aqueous solution at 20°C is within a range of from about 11 to about 30 Mpa.s.
25. The water-soluble copolymer film of Claim 24, wherein the degree of polymerization of the copolymer is such that the viscosity of a 4% aqueous solution at 20°C is within a range of from about 15 to about 25 Mpa.s.
26. The water-soluble packet of Claim 22, wherein the degree of polymerization of the vinyl alcohol-co-AMPS copolymer is such that the viscosity of a 4% aqueous solution at 20°C is in a range of from about 3 to about 18 MPa.s (cps).
27. The water-soluble packet of Claim 26, wherein the degree of polymerization of the vinyl alcohol-co-AMPS copolymer is such that the viscosity of a 4% aqueous solution at 20°C is in a range of from about 4 to about 12 Mpa.s.

28. The water-soluble packet of Claim 17, wherein the liquid component comprises a cleaning concentrate.
29. The water-soluble packet of Claim 24, wherein the cleaning concentrate comprises laundry detergent.